

Economic Diversification of Energy Sources

**Conference on Army Installation
Energy Security and Independence**

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FT. HUACHUCA, ARIZONA

(est. 1877)

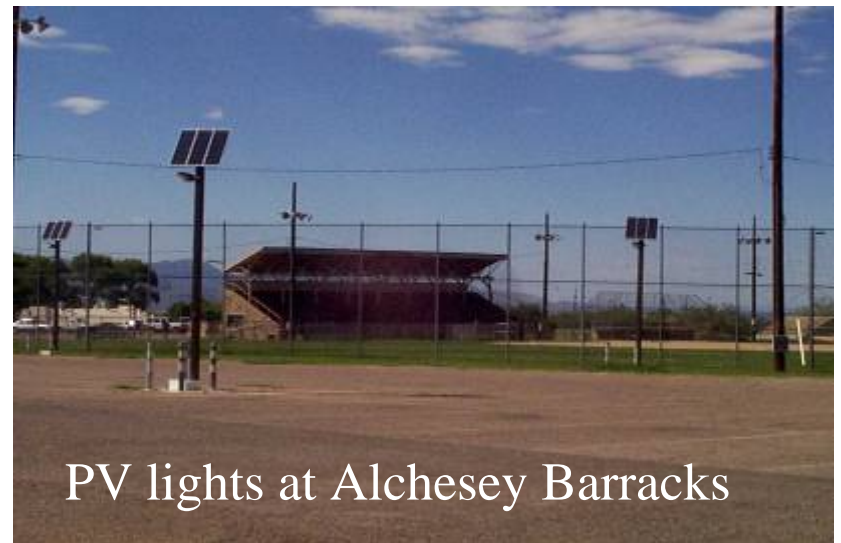


Ft. Huachuca, US Army
Sandia National Labs, USDOE

BACKGROUND

- Ft. Huachuca is one of the oldest US DOD facilities
 - 129 years old
 - Located near US/Mexico border in Southeast Arizona
- Primary mission is U.S. Army Intelligence Training
- Excellent renewable energy resources--solar, wind, and geothermal
- Ft. commanders serious about reducing fossil fuel energy use
 - 35 Energy projects in the last 12 Years
 - Electrical demand reduced 7% since 1994
 - 16 Awards received from the Presidential, Federal and Army level since 1992 for energy conservation, water conservation and renewables
 - Innovation is encouraged

RENEWABLE PROJECTS AT FT. HUACHUCA



ESPC ACTIVITIES AT FT. HUACHUCA

Conventional Projects

- ESPC development activities began in 1995
- Task order contract awarded to HEC in 1996; processed through Huntsville Army Corps of Engineers
- 3 Task Orders issued, most have been focused on energy conservation with a mix of renewables
- Over \$4 Million in Projects have been completed resulting in \$600 Thousand in Annual Energy savings
- Traditional projects include: lighting retrofits and chiller replacements

A COMPLETED CONVENTIONAL ESPC PROJECT AT FT. HUACHUCA



Lighting project at Kitchen at La Hacienda Club

Ft. Huachuca, US Army

Sandia National Labs, USDOE

ESPC ACTIVITIES AT FT. HUACHUCA

Renewable Projects

- **Recently renewable projects have been encouraged; goal is for 5%-10% of ESPC to be renewable in each task order**
- **DOE Super ESPC contractors are not primarily used because they are too technology specific; One solar hot water project for the post hospital was planned, but never built due to personnel shortages at the local hospital**
- **Two Task Orders issued that include daylighting**
- **Renewable projects usually are not economically attractive to stand by themselves; bundling with more cost effective projects is a possible solution.**
- **Energy production projects are a potential problem because ESPC focuses on energy conservation NOT energy production**

COMPLETED IN 2001 SOLARWALLS AND DAYLIGHTING AT LIBBY ARMY AIRFIELD



Barnes Field House





Energy Management in Iraq

- Insulation of buildings, A/C units and ductwork, and water tanks to reduce the need for as frequent fuel convoys for the generators. Used TC Ceramic, www.capstonemfg.com
- Installation of radiant vestibule liners from Natick on hospital tents in Mosul and Tikrit





Water tanks on the hospital



200 KW Fuel Cell at Riley Barracks



10 KW Wind Turbine on the West Range



Daylighting in Barnes Field House Installed in 2001



Where do we head for the FUTURE?

- Solar Heating and Cooling for the South Central Plant
- ECIP Wind Energy Project
- Additional Daylighting
- Scotopic Lighting
- Biomass cogeneration
- MAT wind machines
- Solar thermal systems air systems
- Insulation and windows
- Additional Electric Feed into Fort Huachuca

Why Economic Diversification of Energy Sources

- We could have our own oil supplies, but if the world price of oil goes up, so will our prices
- Same for coal and natural gas
- Once you build an energy system using the sun, wind, biomass or geothermal, you fix the cost of energy for the long term